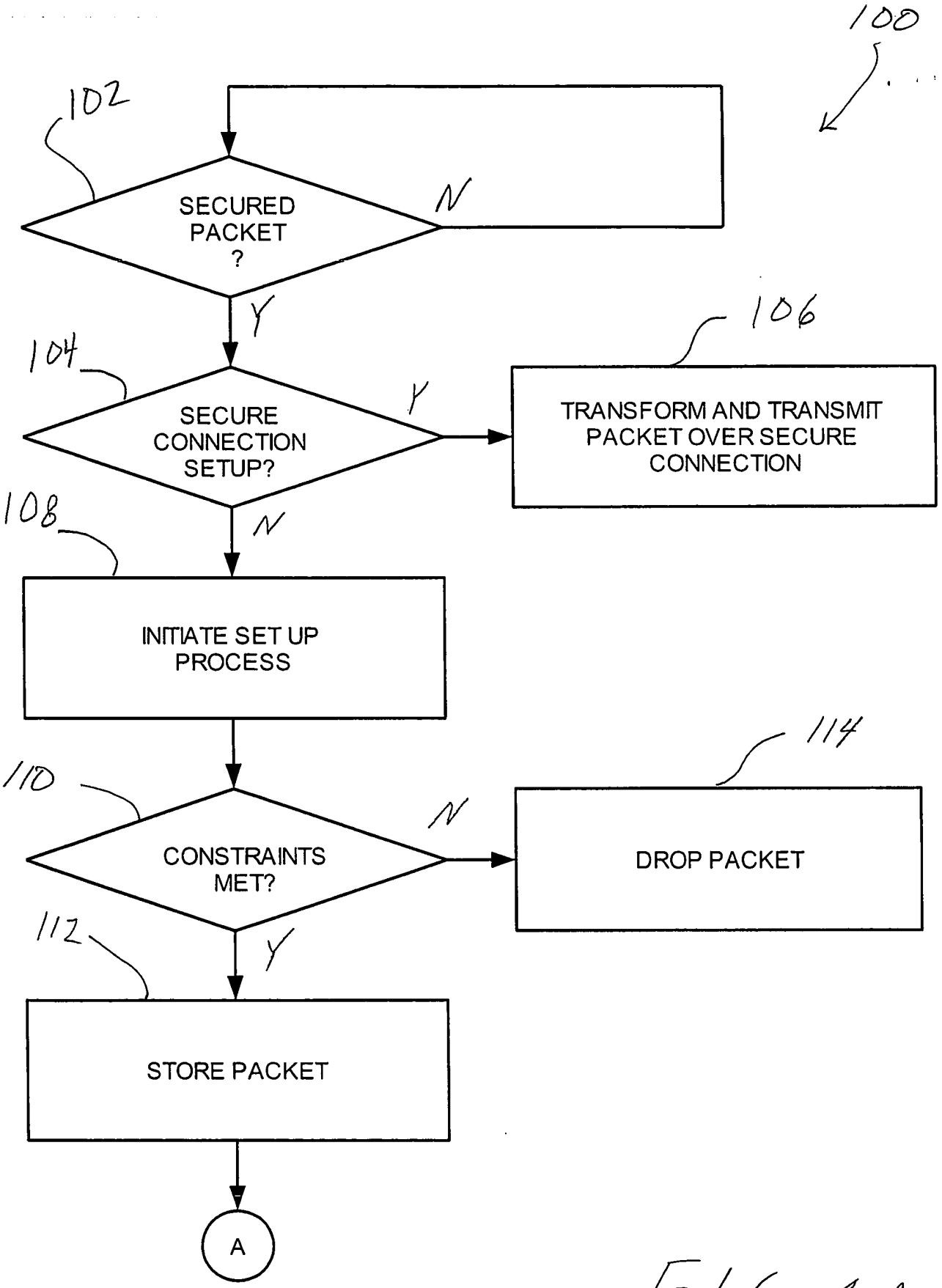

100
102
SECURED PACKET ?
N
Y
104
SECURE CONNECTION SETUP?
Y
106
TRANSFORM AND TRANSMIT PACKET OVER SECURE CONNECTION
N
108
INITIATE SET UP PROCESS
110
CONSTRAINTS MET?
N
114
DROP PACKET
Y
112
STORE PACKET
A

FIG. 1A

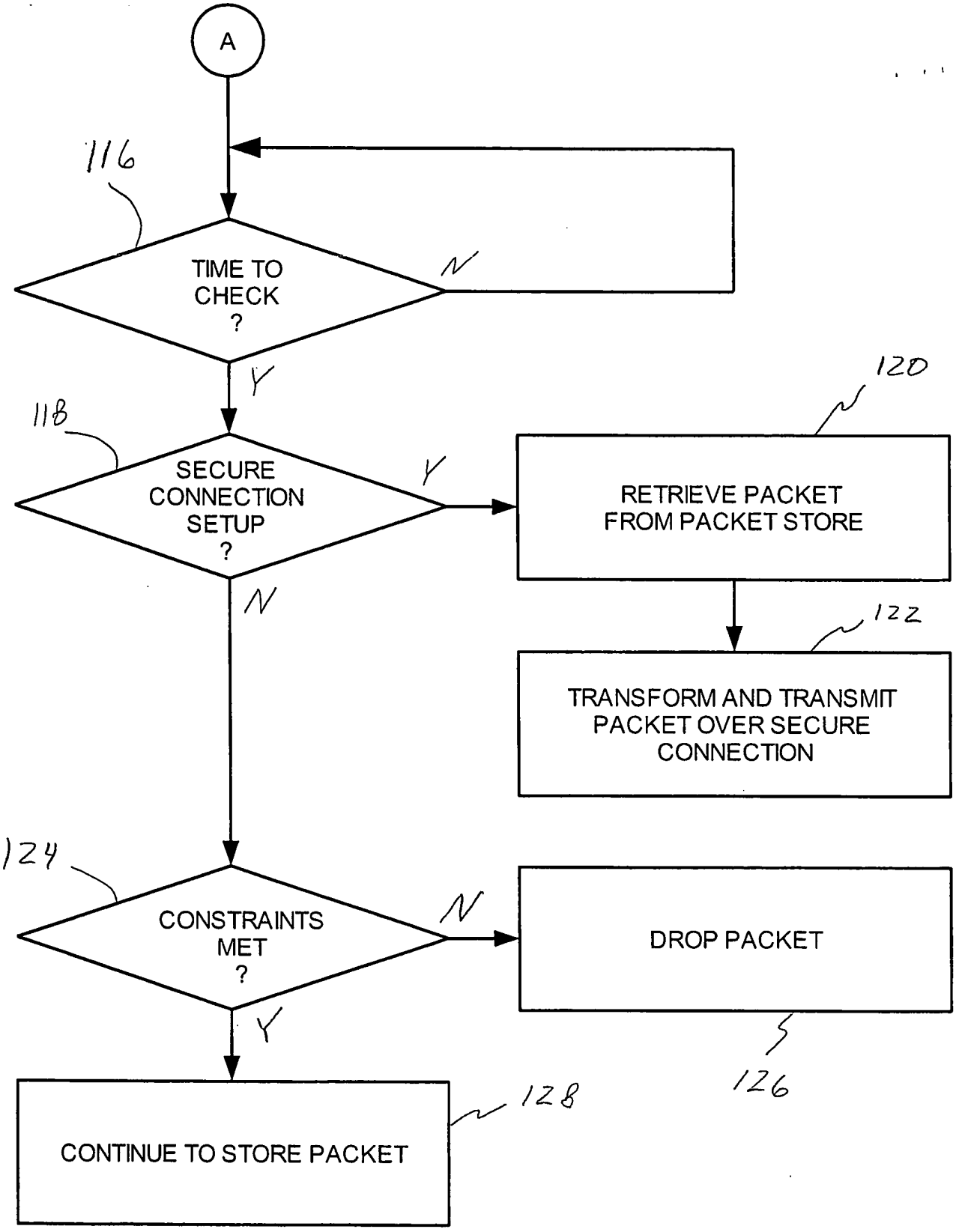

A
116
TIME TO CHECK ?
N
Y
118
SECURE CONNECTION SETUP ?
Y
120
RETRIEVE PACKET FROM PACKET STORE
122
TRANSFORM AND TRANSMIT PACKET OVER SECURE CONNECTION
N
124
CONSTRAINTS MET ?
N
DROP PACKET
126
Y
CONTINUE TO STORE PACKET
128

FIG. 1B

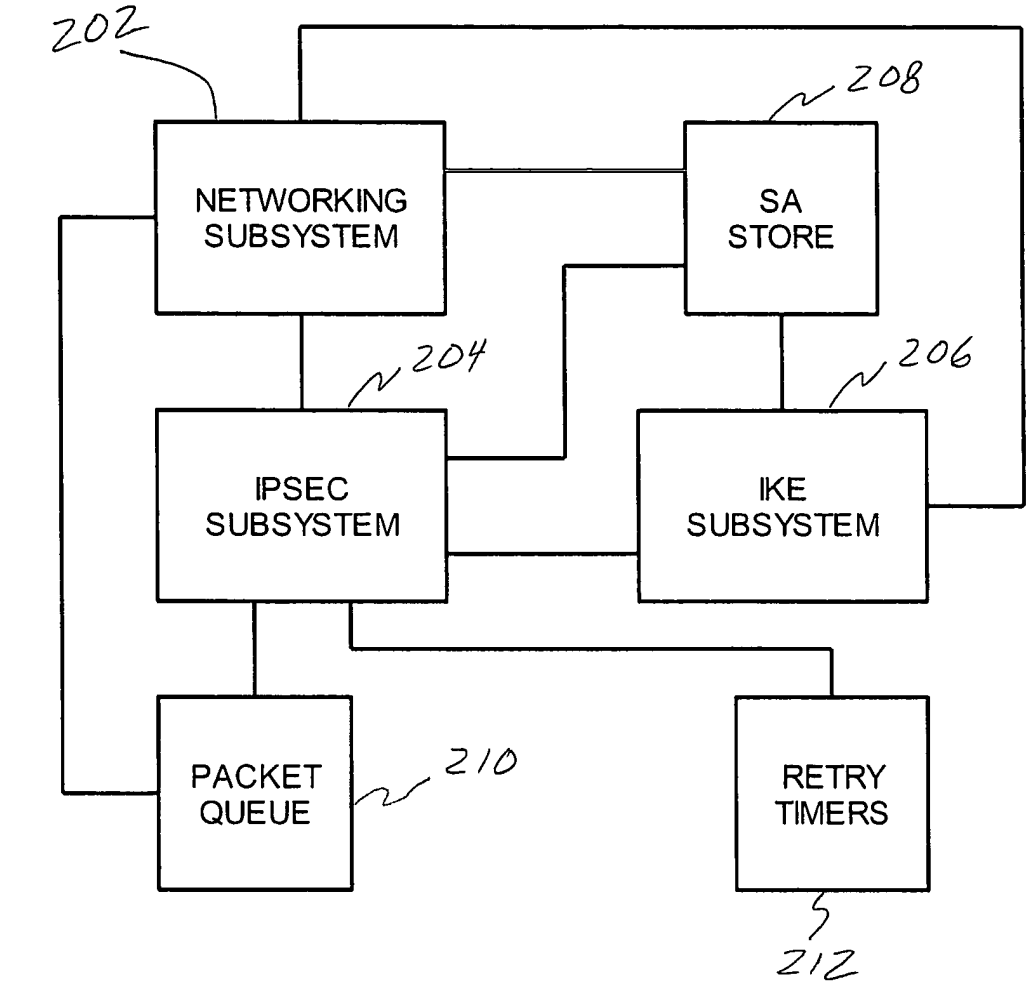

202
208
NETWORKING SUBSYSTEM
SA STORE
204
206
IPSEC SUBSYSTEM
IKE SUBSYSTEM
PACKET QUEUE
210
RETRY TIMERS
212
200

FIG. 2

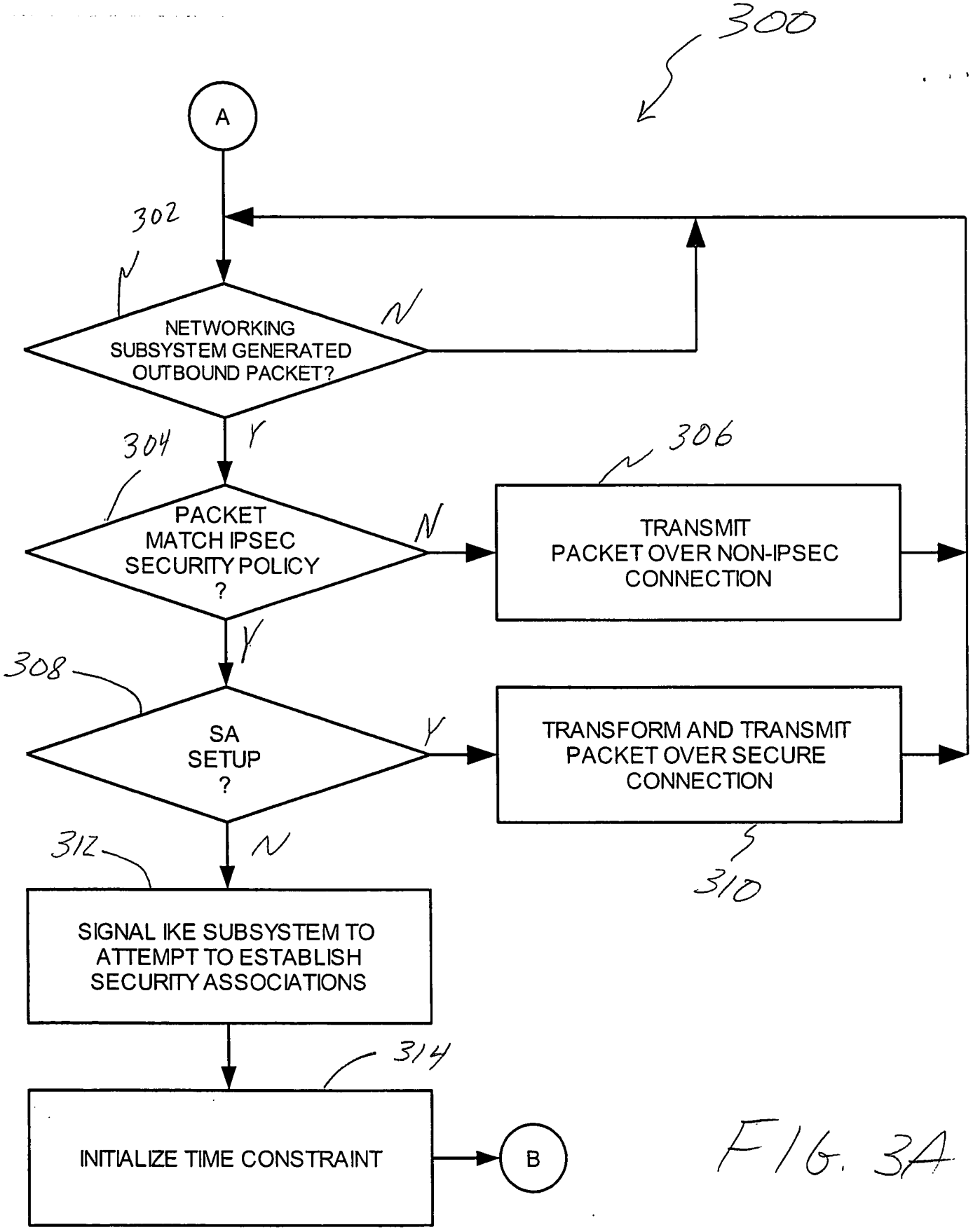

300
A
302
NETWORKING SUBSYSTEM GENERATED OUTBOUND PACKET?
N
Y
304
PACKET MATCH IPSEC SECURITY POLICY ?
306
N
TRANSMIT PACKET OVER NON-IPSEC CONNECTION
Y
308
SA SETUP ?
Y
TRANSFORM AND TRANSMIT PACKET OVER SECURE CONNECTION
310
N
312
SIGNAL IKE SUBSYSTEM TO ATTEMPT TO ESTABLISH SECURITY ASSOCIATIONS
314
INITIALIZE TIME CONSTRAINT
B

FIG. 3A

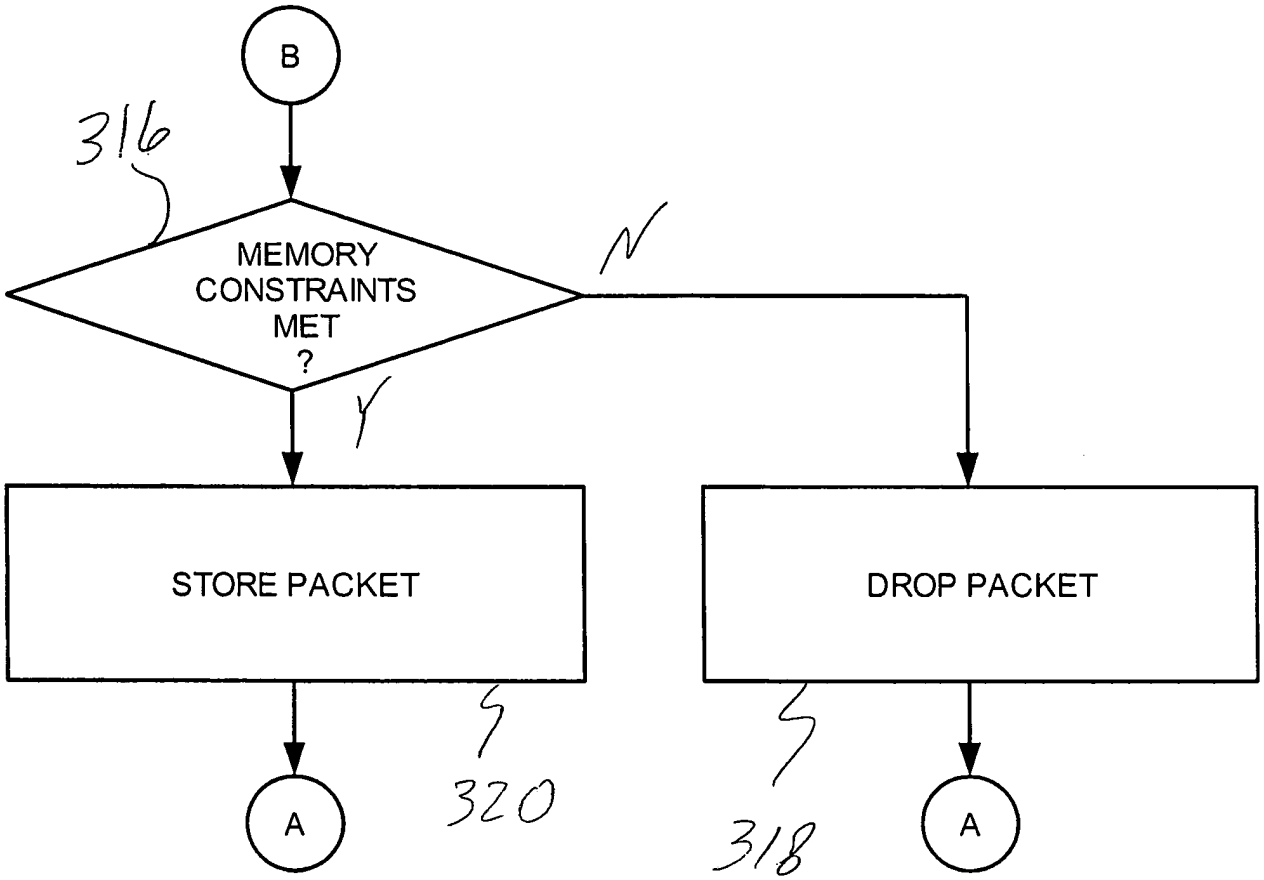
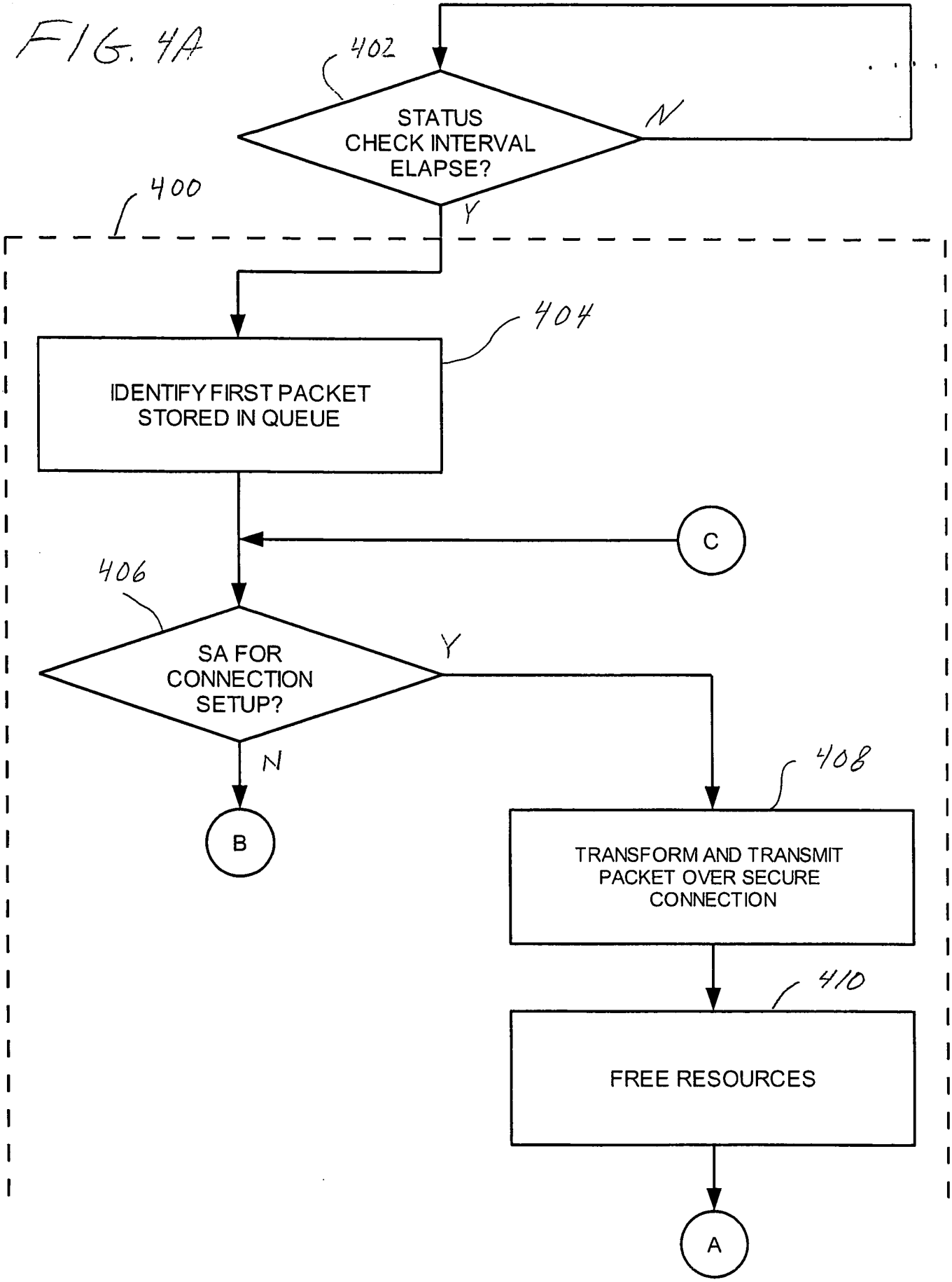

B
316
MEMORY CONSTRAINTS MET ?
N
Y
STORE PACKET
DROP PACKET
A
320
318
A

FIG. 3B

FIG. 4A


402
STATUS CHECK INTERVAL ELAPSE?
N
Y
400
404
IDENTIFY FIRST PACKET STORED IN QUEUE
C
406
SA FOR CONNECTION SETUP?
Y
N
B
408
TRANSFORM AND TRANSMIT PACKET OVER SECURE CONNECTION
410
FREE RESOURCES
A

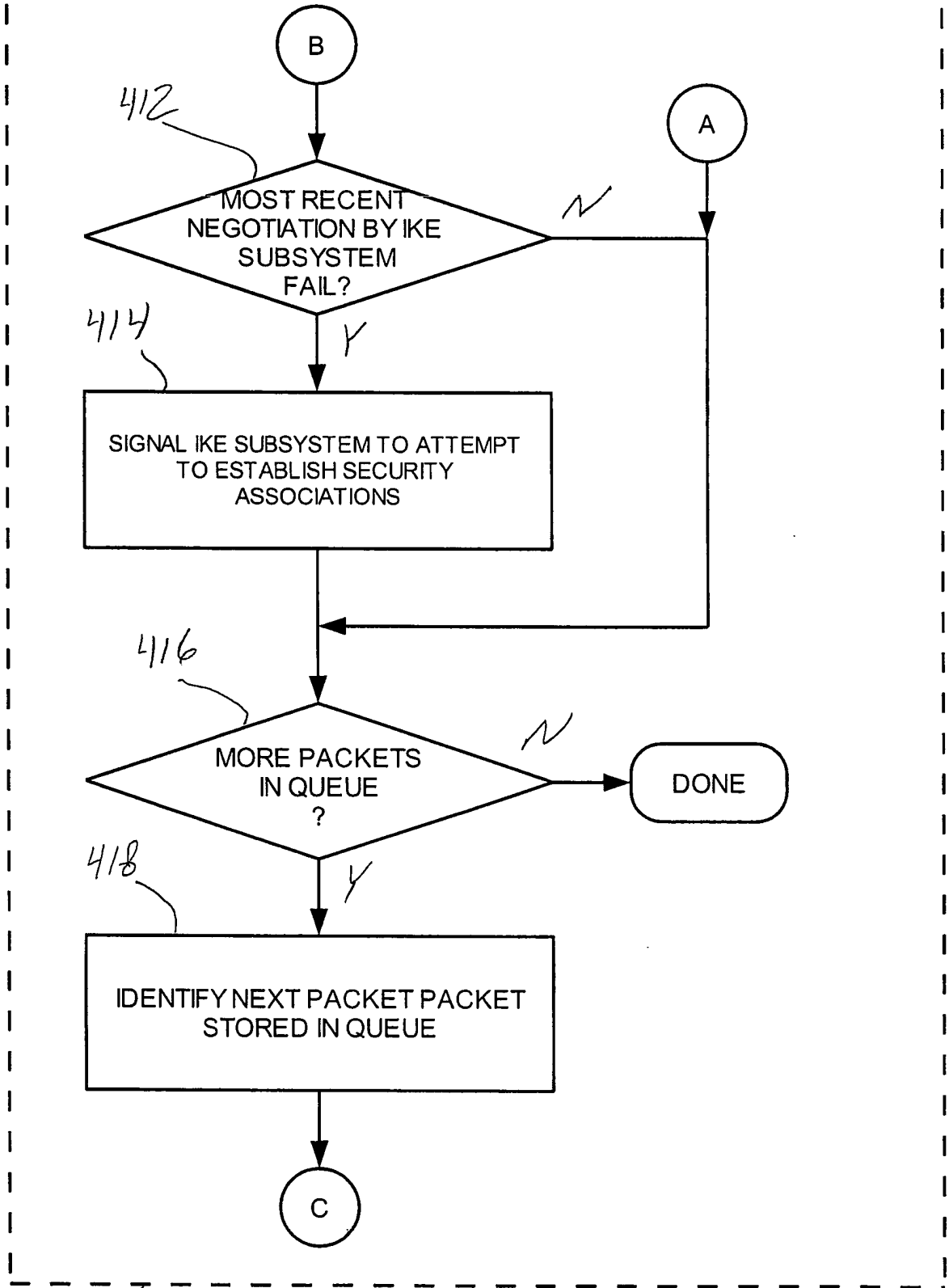

B
412
MOST RECENT NEGOTIATION BY IKE SUBSYSTEM FAIL?
N
A
Y
414
SIGNAL IKE SUBSYSTEM TO ATTEMPT TO ESTABLISH SECURITY ASSOCIATIONS
416
MORE PACKETS IN QUEUE ?
N
DONE
Y
418
IDENTIFY NEXT PACKET PACKET STORED IN QUEUE
C
400

FIG. 4B

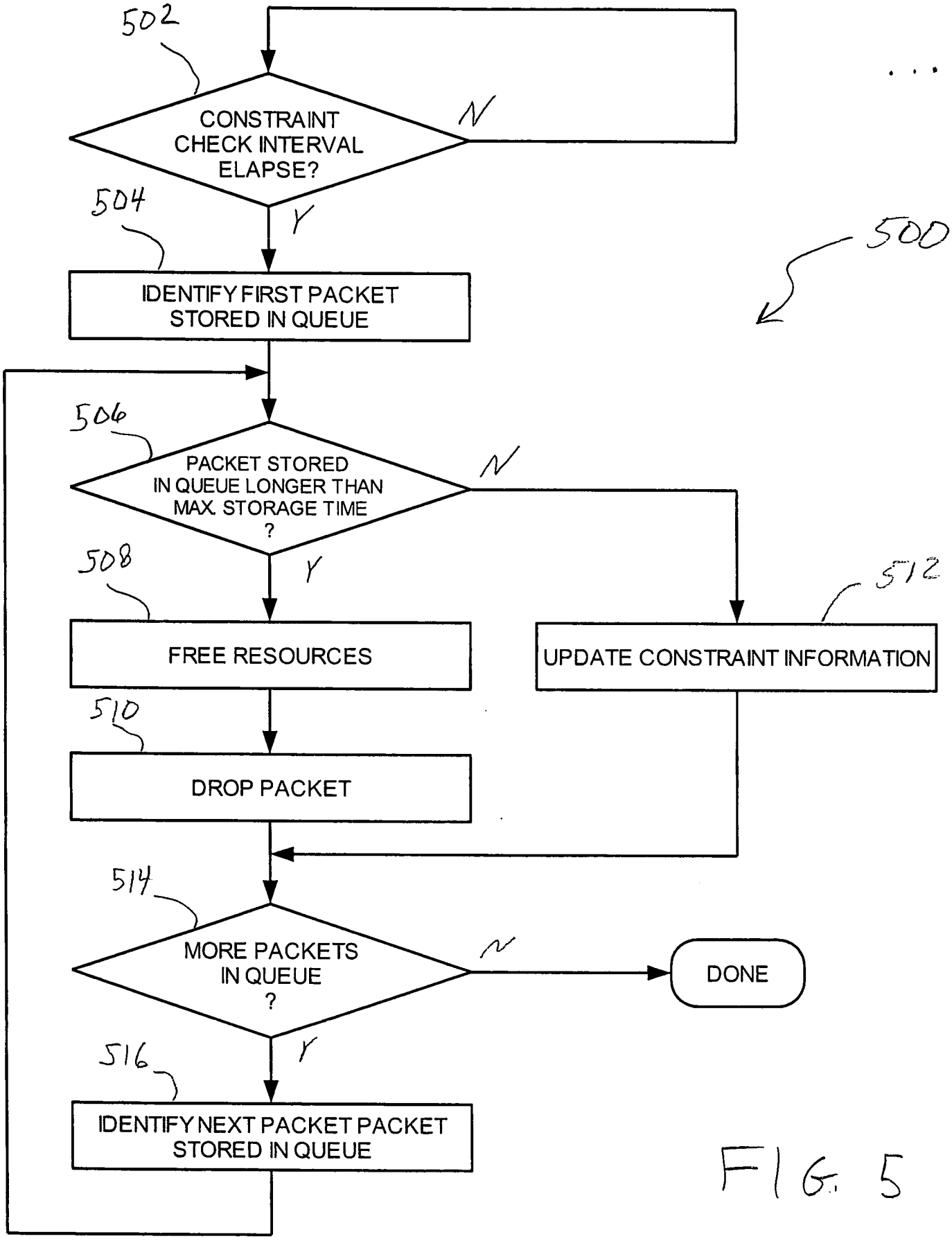
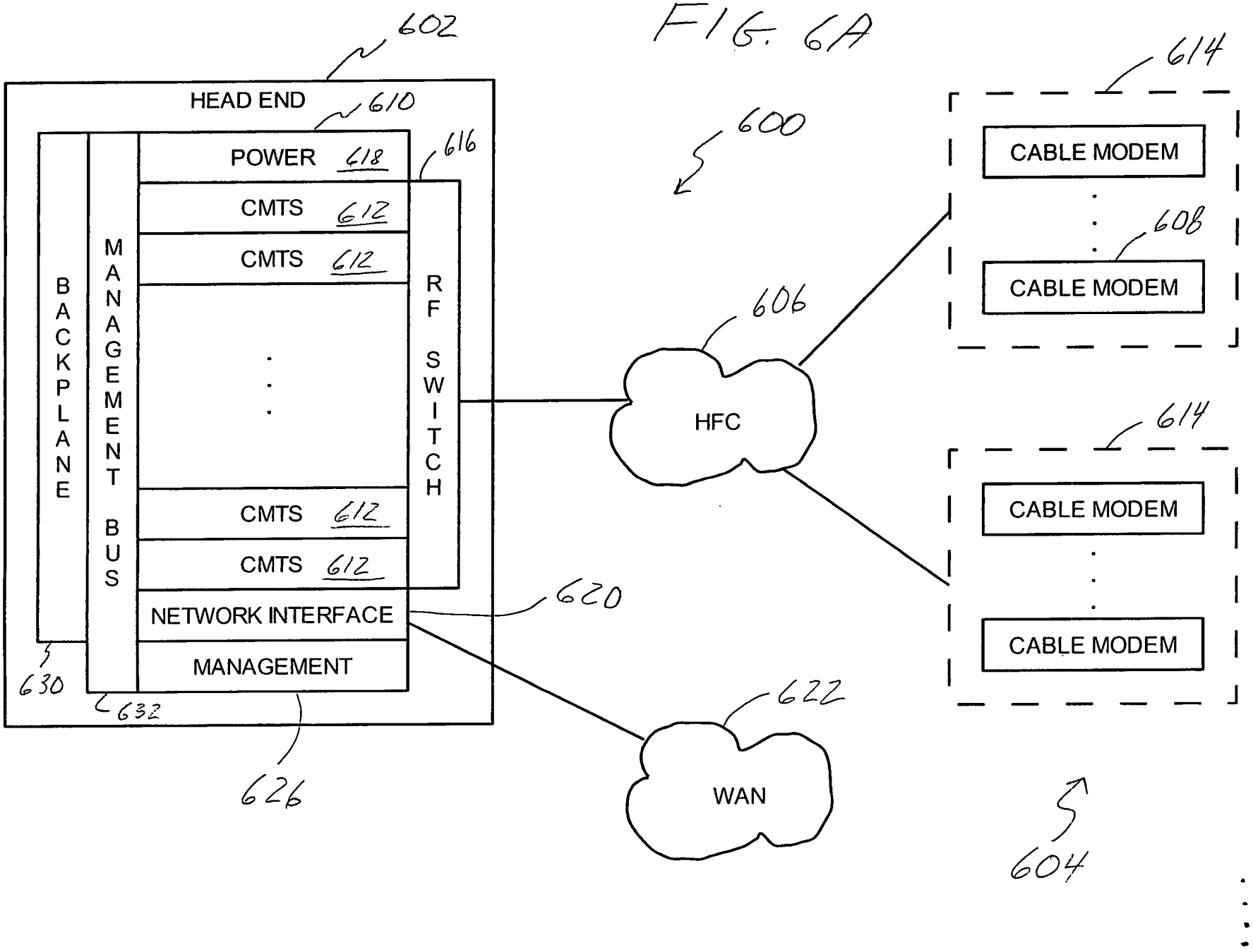

502
CONSTRAINT CHECK INTERVAL ELAPSE?
N
Y
504
IDENTIFY FIRST PACKET STORED IN QUEUE
500
506
PACKET STORED IN QUEUE LONGER THAN MAX. STORAGE TIME ?
N
Y
508
FREE RESOURCES
512
UPDATE CONSTRAINT INFORMATION
510
DROP PACKET
514
MORE PACKETS IN QUEUE ?
N
DONE
Y
516
IDENTIFY NEXT PACKET PACKET STORED IN QUEUE

FIG. 5

FIG. 6A


602
HEAD END
610
BACKPLANE
MANAGEMENT BUS
POWER 618
616
CMTS 612
CMTS 612
CMTS 612
CMTS 612
RF SWITCH
NETWORK INTERFACE
620
MANAGEMENT
630
632
626
600
606
HFC
614
CABLE MODEM
608
CABLE MODEM
614
CABLE MODEM
CABLE MODEM
622
WAN
604

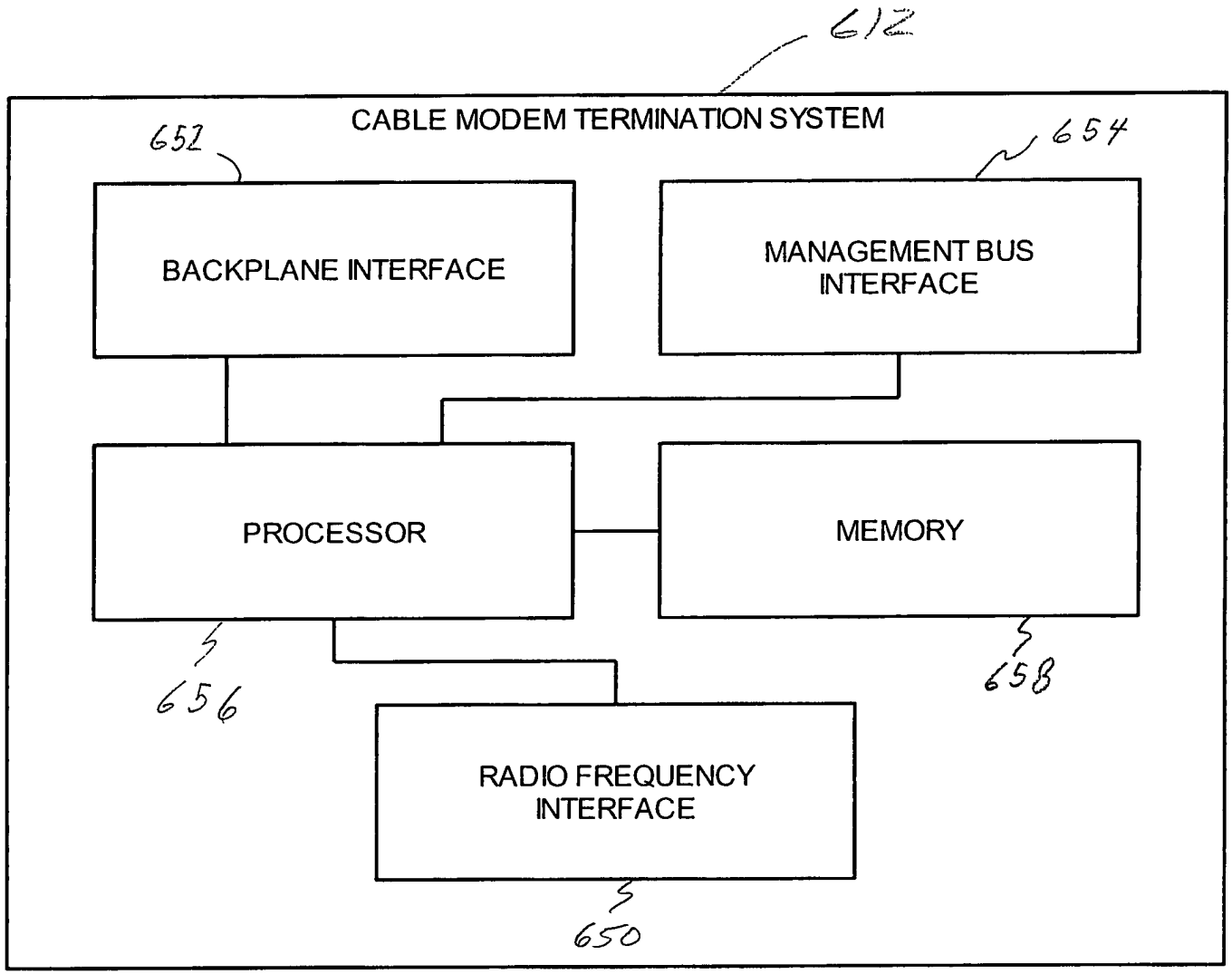

612
CABLE MODEM TERMINATION SYSTEM
652
654
BACKPLANE INTERFACE
MANAGEMENT BUS INTERFACE
PROCESSOR
MEMORY
656
658
RADIO FREQUENCY INTERFACE
650

FIG. 6B

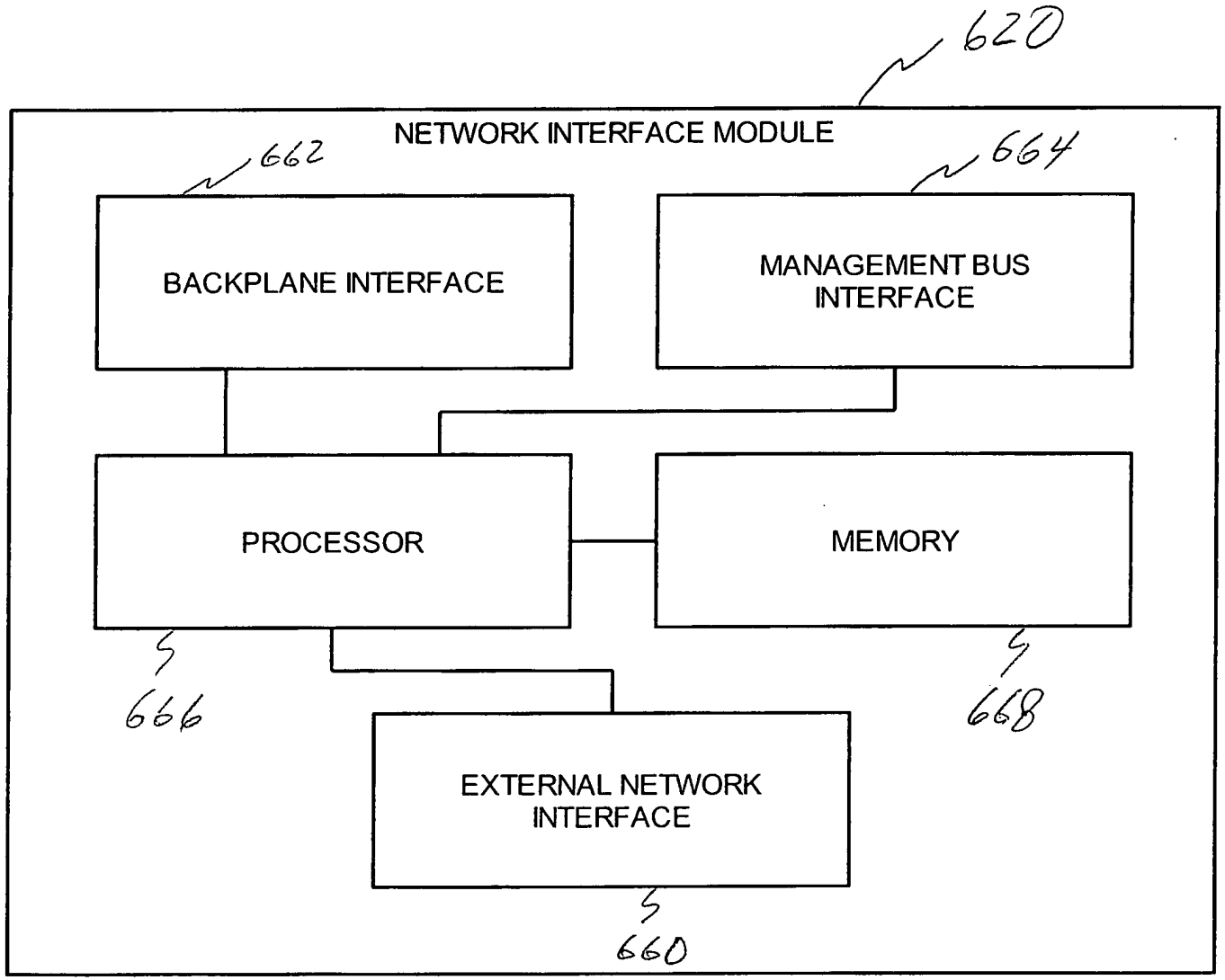

620
NETWORK INTERFACE MODULE
662
664
BACKPLANE INTERFACE
MANAGEMENT BUS INTERFACE
PROCESSOR
MEMORY
666
668
EXTERNAL NETWORK INTERFACE
660

FIG. 6C